all, political and governmental interferences and constraints."

In concluding his lecture, Dr. Mrak said, "I have high hopes that the technologists will do their part, but the politicians and others must work along with them."

• **The Scientific Program** consisted of 54 papers presented during 11 subplenary sessions, 372 contributed papers presented during 31 sessions, and 9 round table meetings. Subplenary speakers delivered papers on the following subjects: resources of food; safety and nutritional aspects of food; preservation and processing of food; and physical, chemical, and sensory properties of food.

The 31 contributed paper sessions were categorized into the following 11 main topics: exploitation of food resources; food safety; food engineering and technology; organoleptic properties; basic problems of food constitutents; biochemical techniques in food science; food analysis; food microbiology; nutrition; food additives; and traditional local foods.

Round table participants discussed these topics: documentation and information; quality of meat and meat products; training for research and research management in developing countries; Brazil's food science challenges; milk proteins; services for the food industry in developing countries; food physics; and potential of post harvest technology in alleviating world hunger.

• **Proceedings of the Congress** are now being published. The book will consist mainly of the papers presented during the subplenary sessions. For information on the price and publication date of the proceedings, contact Prof. Hisateru Mitsuda, 64 Takanawate-Cho, Kamigamo, Kita-Ku, Kyoto, 603, Japan.

• **Scientific Exhibitions** were designed to show the development of the Japanese food industry in the last decade, rice and rice products of Japan, foods of the future, and traditional foods of Japan. The technical exhibits displayed food additives and ingredients, food processing and packaging equipment and materials, and laboratory instrumentation and supplies. The combined scientific and technical exhibition occupied more than 200 exhibit booths.

• **Critiques** of 6 subplenary sessions and 3 contributed paper sessions are presented below. These critical reviews are the result of the unselfish efforts of IFT members who attended the Congress. We are grateful to them for taking the time during and after the Congress to write these reviews and for allowing us to publish their impressions of the sessions.

John B. Klis

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EXPLOITATION OF FOOD PROTEIN RESOURCES

This subplenary session offered a timely review of factors of importance in the efficient utilization of food proteins. It brought together recognized experts in the field who not only described established food protein resources, but also emphasized the necessity for new concepts for protein source development by genetic manipulation, increased use of unconventional protein sources, and chemical and physical modification to produce different functional properties, prevent processing damage, and improve nutritional quality.

R. Bressani of Guatemala was the session chairman and first speaker. He reviewed factors affecting world protein resources in a thorough and extremely well-prepared presentation. He discussed the following five factors in detail: nutritional value of proteins; determination of nutritional quality; economics of protein production; toxic factors in proteins—present naturally or developed after harvesting and/or during processing; and technology for the production and utilization of plant proteins. Dr. Bressani concluded his paper by emphasizing that the number of protein resources must be increased because economic pressures will force further research toward the development of new food products from vegetable sources as new food forms or as replacements for present forms.

O.L. Oke of Nigeria discussed the necessity for examining unconventional cereals as prospective food protein sources. He pointed out that unconventional cereals grow wild, are drought resistant, have less than half the water requirement of major cereals, do not possess any serious toxic problems, produce reasonable yields on marginal land, need little fertilizer, and are well-known to the natives of the areas where they grow. Some unconventional cereals, such as quiona, amaranthus, and teff, have better protein quality than many conventional cereals. Dr. Oke said that the systematic search for cereal gene improvement should be extended to the unconventional cereals. Unconventional cereals offer the added advantage of not requiring changes in the dietary habits of the inhabitants of developing countries.

M.R. Molina of Guatemala described the problems associated with the use of oilseeds as protein sources and discussed how these problems can be or have been overcome. Amino acid deficiency can generally be overcome by complementation or fortification techniques. The development of pre-press solvent extraction or direct solvent extraction techniques has overcome the detrimental effects of processing temperatures on oilseed protein and has led to the manufacture of defatted products with a diversity of functional characteristics that facilitate their inclusion in a variety of food systems.

Dr. Moilina pointed out that although good progress has been made in detoxifying soybean, peanut, and cottonseed, research is still needed to develop practical methods of detoxifying rapeseed or castor bean meals. Limitations due to high fiber content have been overcome by the development of protein isolates. According to Dr. Molina, extrusion cooking, which permits texturization of oilseed flours, offers the most suitable means at the present time for more efficient utilization of oilseed flours as protein sources in developing countries.

P. van der Wal of The Netherlands discussed the use of Single Cell Protein and leaf protein in animal feeding, and P. Hansen of Denmark described some recent developments in the isolation of fish protein from underutilized species.

Virginia H. Holsinger

FOOD SAFETY

The five papers presented during this subplenary session included some historical and philosophical observations on the evolution of food safety concerns, much attention to current problems, and specific attention to irradiation of potatoes and chemical contamination of food.

R. Schaffner of the U.S. Food and Drug Administration, in a paper co-authored by A. Kolbye, recounted the development of food safety evaluation from its initial concern with toxicity derived from forsenic medicine and industrial exposures. Since 1950 concentration on carcinogenicity has diverged from other toxic effects, but itself has split also into mutagenicity and teratogenicity. We have increasingly stressed the environmental origins of cancer, and grown skeptical that a "threshold" exists—a skepticism embodied today in official policy.

As individuals we make safety judgments with few conscious criteria, but by comparisons within our experience. We should always recognize that between the extremes of safe and unsafe often presented to the consumer, there is in fact a large middle ground. The authors seemed to be saying that while there exists this wide spectrum of risk which individuals interpret, not only